

Peter Suttie, Vol 3

10/24/00

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

4 HONEYWELL INTERNATIONAL INC.,)
and HONEYWELL INTELLECTUAL)
5 PROPERTY, INC.,)
6 Plaintiffs,)
7 vs.) No. 99-309 (GMS)
8 HAMILTON SUNDSTRAND CORPORATION,)
9 Defendant.)

15 DEPOSITION OF PETER JOHN SUTTIE
San Diego, California
17 Tuesday, October 24, 2000
18 Volume III

23 Reported by:
24 JESSICA E. MASSE
CSR No. 9910
25 Job No. 16831

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FOR THE DISTRICT OF DELAWARE

4 HONEYWELL INTERNATIONAL INC.,)
and HONEYWELL INTELLECTUAL)
5 PROPERTY, INC.,)
6 Plaintiffs,)
7 vs.) No. 99-309 (GMS)
8 HAMILTON SUNDSTRAND CORPORATION,)
9 Defendant.)

14 Deposition of PETER JOHN SUTTIE,
15 Volume III, taken on behalf of
16 Plaintiffs, at 501 West Broadway, Suite
17 1300, San Diego, California, beginning at
18 9:18 a.m. and ending at 5:11 p.m. on
19 Tuesday, October 24, 2000, before JESSICA
20 E. MASSE, Certified Shorthand Reporter.
21 No. 9910.

1 APPEARANCES:
2 For the Plaintiffs:
3 KIRKLAND & ELLIS
BY: VICKIE REZNIK
4 Attorney at Law
5 153 East 53rd Street
New York, New York 10022
(212) 446-4695

6 For the Defendant:
7 MARSHALL, O'TOOLE, GERSTEIN, MURRAY & BORUN
BY: WILLIAM E. McCracken
-and-
8 THOMAS A. MILLER
9 Attorneys at Law
10 233 South Wacker Drive
11 6300 Sears Tower
12 Chicago, Illinois 60606
(312) 474-6300

Also Present:

RICHARD H. KOSAKOWSKI

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1	San Diego, California, Tuesday, October 24, 2000
2	9:18 a.m. - 5:11 p.m.
3	
4	PETER JOHN SUTTIE,
5	having been first duly sworn, was examined and testified
6	as follows:
7	
8	EXAMINATION
9	BY MS. REZNIK:
10	Q Could you please state your name for the record.
11	A Peter John Suttie.
12	Q Have you testified in this case before?
13	A Yes.
14	Q In what capacity?
15	A I was asked in the capacity -- I think I answered the question -- for myself. I testified as an individual.
16	Q Okay. Am I correct, Mr. Suttie -- Let me direct this to your counsel.
17	Am I correct that the topics being covered today by Mr. Suttie are found in Honeywell's notice of deposition dated June 27, with the sole exception of topic 1, which will be dealt with separately by Hamilton Sundstrand's interrogatories and possibly a different
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Q Yes.
A In 1984.
Q When did Mr. McArthur end his employment with Sundstrand?
A I don't know. I'm not -- I wasn't prepared to answer that question today.
Q What was Mr. McArthur's position when he was working at Sundstrand?
A He was laterally manager of systems and controls.
Q What were his responsibilities as your supervisor? You said he was your supervisor.
A He had multiple positions. He started off as the systems engineer. When I knew him, he was my immediate supervisor as manager of the systems department. He then became a manager of all systems and controls.
So is your question what were his responsibilities when he was my supervisor?
Q Yes.
A He was the manager of the systems organization and responsible for a group of eight -- five to eight people -- it varied from time to time -- who were doing systems development work.
Q So when he was your supervisor at Sundstrand,

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Q The first paragraph we'll call topic 2.
A Okay.
Q The second paragraph we'll call topic 3, and the last paragraph we'll call topic 4.
A Okay.
Q So this will make it easier for us to understand what we are talking about. Now, can we -- let me go back to the question. You talked to Mr. McArthur, then, about topic 2 in Exhibit 229?
A Yes.
Q Is it your understanding that Mr. McArthur is the most knowledgeable person about topic 2?
A No.
MR. MCCRACKEN: Objection. That question has been asked and answered. The witness testified that he was the most knowledgeable.
BY MS. REZNIK:
Q Why is it that you talked to Mr. McArthur about topic 2?
A Because the situation was a number of years ago, and I was just talking to other people who were involved to ensure that my recollection was accurate, and that I had not omitted anything in my recollection.
Q Did Mr. McArthur help you understand the information sought in topic 2?

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1 did he have the primary responsibility for the control
2 system of the APS 3200?
3 MR. McCRAKEN: Counsel, I'm going to object at
4 this point. I'd like to have a standing objection at
5 this time. This is outside the scope of the 30(b)(6)
6 notice. For that reason, I think you are exceeding the
7 scope. We will, of course, attempt to cooperate and to
8 give you what you would like to get out of this, but we
9 would ask that you please stick within the parameters of
10 what the court order is.
11 MS. REZNIK: I understand your objection, but I
12 believe I'm just asking foundation questions because he
13 cited these various individuals.
14 Q When you spoke with Mr. McArthur, do you
15 remember the substance of your conversation?
A Yes.
Q What specifically did you talk about in
18 preparation for this deposition today?
A We were talking about item 1 of these three
20 paragraphs.
Q By "item 1," you mean topic 2 that we've
22 identified in Exhibit 229? Let's clarify this so it's
23 easy. Let me have the exhibit for a second. On page 2
24 of Exhibit 229 there are three topics, correct, here?
A Three paragraphs at the top of the page, yes.

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1 A Yes, he did.
2 Q And that is because he had particular knowledge
3 about topic 2 that you felt you could get from him; is
4 that correct?
5 A In any memory activity, it's useful for people
6 who were involved to discuss the subject to prompt
7 potential recollections in others. Though my
8 recollection was greater than his, he provided some
9 useful reminders to me of things that had not
10 immediately come to my recollection.
11 Q You also mentioned Wendell Reed; correct?
A Correct.
13 Q Is Mr. Reed a current employee of Sundstrand?
A No.
15 Q When did he end his employment with Sundstrand?
A I'm not prepared to answer that. I don't know.
17 Q What is it that you talked about with Mr. Reed
18 in preparation for today?
A Item 2.
20 Q So that would be topic 2. The same you spoke
about with Mr. McArthur?
22 A Topic 2, yes.
23 Q Okay. You also mentioned a Paul Hilgeman,
H-i-l-g-e-m-a-n.
25 A Correct.

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3 (Pages 345 to 348)

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1 Q What did you discuss with Mr. Hilgeman in
2 preparation for the deposition today?
3 A Topic 2.
4 Q Did you speak to anyone about topic 3 in
5 preparation for the deposition today?
6 A My counsel.
7 Q No one other than counsel?
8 A No.
9 Q Did you speak to anyone about topic 4 in
10 preparation for the deposition today, other than your
11 counsel?
12 A No.
13 Q Are you familiar with an individual by the name
14 of Terry Maedche, spelled M-a-e-d-c-h-e?
15 A Yes.
16 Q How are you familiar with him?
17 A He worked for Sundstrand.
18 Q Do you know when he began his employment at
19 Sundstrand?
20 A On December 18th, 1992.
21 Q Do you know if he is still employed at
22 Sundstrand?
23 A Yes. I know.
24 Q Is he still employed at Sundstrand?
25 A No.

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1 control system had already been completed. We were in
2 the process of testing it to make sure that it worked
3 correctly, adequately, met the customer specification
4 requirement, met our internal specification requirement.
5 So he was involved in some test activity. He also, as I
6 think I mentioned previously, was present in Toulouse,
7 France for the flight test campaign.
8 Q All of his activities were related to the APS
9 3200; is that correct?
10 A I'm not prepared to answer that.
11 Q The testing activity that you were describing,
12 that was related to the APS 3200; correct?
13 A Correct.
14 Q You testified that he was a systems engineer;
15 is that correct?
16 A Correct.
17 Q Was he always a systems engineer, or did he
18 hold other titles at Sundstrand?
19 MR. McCACKEN: I'm going to object to this
20 line of questioning. These questions have been asked
21 and answered at his previous deposition, and if we are
22 going over old ground, that is not what the court
23 ordered us to do, to go over old ground, obviously.
24 However, we are trying to be cooperative here and give
25 you what the court has ordered. We would like to ask

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1 Q When did he end his employment at Sundstrand?
2 A I was not prepared to answer that question.
3 Q You previously testified that you believed
4 Mr. Maedche may have ended his employment in '94. Does
5 that sound familiar?
6 A I -- I remember previously testifying that
7 that's what I thought, yes, from an individual point of
8 view.
9 Q I understand. Are you aware that he used to
10 work for AlliedSignal or Garrett, now known as
11 Honeywell?
12 A Yes.
13 Q Are you aware that he used to work on
14 AlliedSignal's, now Honeywell's, APUS?
15 A I was not prepared to answer that question.
16 Q So you are saying you are not aware whether or
17 not he worked on Honeywell's APUS?
18 A I have not verified the information to provide
19 it to you right now as known to be accurate to me.
20 Q What were Mr. Maedche's general
21 responsibilities at Sundstrand when he was employed at
22 Sundstrand?
23 A He was a control systems engineer.
24 Q What did he do as a control systems engineer?
25 A In the time frame he joined us, the APS 3200

1 for your cooperation in not going over old ground and
2 asking the same questions and getting the same answers.

3 MS. REZNICK: I understand your objection. I
4 believe I'm just trying to lay the foundation for
5 discussing the topics identified in the deposition
6 notice, in Exhibit 229, and that's really the only
7 basis -- the only reason that I'm going into these
8 questions, and I don't intend to go much beyond that.

9 MR. McCACKEN: If it would be helpful to refer
10 to his previous deposition transcript in order to do
11 that, we would -- we would ask that you consider that
12 possibility as well.

13 BY MS. REZNICK:

14 Q Did Mr. Maedche have any other responsibilities
15 other than the testing activity on the APS 3200 as a
16 systems engineer at Sundstrand? Let me rephrase the
17 question, actually. Did Mr. Maedche, as a systems
18 engineer at Sundstrand, have any other responsibilities
19 other than the testing activity on the APS 3200?

20 MR. McCACKEN: Objection; ambiguous.

21 THE WITNESS: As I mentioned previously, he was
22 supporting our flight test campaign in Toulouse.

23 BY MS. REZNICK:

24 Q The testing activity on the APS 3200 that you
25 are referring to included the testing of the surge

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control system of the APS 3200; correct?

A Yes.

Q Did it also include the testing activity of the fuel control system of the APS 3200?

A Not as I recall, no.

Q What types of testing activity on the APS 3200 did Mr. Maedche take a role in?

A He supported some transient load tests which we did on the APU. By support, I mean a test engineer ran the test. There was a crew of people to run the test. He was the systems engineer asking for the specific test to be run, and he would analyze the data retrieved.

Q Is that the only testing activity on the APS 3200 you are saying he was involved in?

A As I recall, yes.

Q Mr. Suttle, I'm handing you what's been previously marked as Exhibit 69. Do you have this document in front of you?

A I have a document marked Exhibit 69, Edelman.

Q And is this coordination memo between Sundstrand and Turbomeca Exhibit 69? Let me rephrase it. Is Exhibit 69 a coordination memo between Sundstrand and Turbomeca?

A It's a coordination memo from Turbomeca.

Q Who is the coordination memo to?

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Therefore, it is encompassed within topic 4.

MR. McCACKEN: I simply fail to understand your reasoning on that. It says Turbomeca, Labinal, and their respective employees and agents. Are you saying APIC is an agent or employee of Turbomeca and Labinal?

MS. REZNIK: That's what I'd like to know and question the witness about.

MR. McCACKEN: Well, the witness has already stated that he doesn't have that knowledge. That question was asked and answered of other witnesses, I believe.

MS. REZNIK: None of those witnesses were 30(b)(6) witnesses.

MR. McCACKEN: I don't see how this relates to the 30(b)(6) notice. I just don't understand it. In fact, this witness was asked about the role of Turbomeca and APIC in his previous deposition. We have chapter/verse citations for you: Page 23, line 10, through page 25, line 7, in one place in his previous deposition.

Could we go off the record for a moment?

MS. REZNIK: Sure.

(Discussion off the record.)

BY MS. REZNIK:

Q Looking at Exhibit 69 in front of you,

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A Steve Gates, Peg Martens, and Alberto Ducrocq.

Q Are these individuals at Sundstrand?

A No.

Q So who is this coordination memo to, in a general sense?

A Not all these individuals. At Sundstrand is Steve Gates and Peg Martens. Alberto Ducrocq is APIC.

Q What is the relationship between APIC and Sundstrand?

MR. McCACKEN: Objection; asked and answered.

THE WITNESS: I wasn't prepared to answer that today.

MS. REZNIK: Counsel, I believe that was a topic encompassed in topic 4 based on the September 25th hearing before Judge Steve.

MR. McCACKEN: I see in the 30(b)(6) notice the contributions made to the design and development of the APS 3200 by Turbomeca, Labinal, and their respective employees and agents. I would only ask where APIC is in that designation.

MS. REZNIK: Understanding the contributions made to the design and development of the APS 3200 by Turbomeca, Labinal, and their respective employees and agents, it's my understanding that those contributions would have been provided to individuals at APIC.

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Mr. Suttle, can you tell me what the subject line of this coordination memo is?

A Load compressor delta P/P.

Q At the bottom of that page it says copy; correct?

A Correct.

Q Can you see that it's copied to Maedche?

A Yes.

Q Is that Terry Maedche?

A Yes.

Q Do you know why he was copied on this memo?

A Because, as I mentioned, he was a systems engineer working on the APS 3200. I copied to Kourosh and the lead systems engineer Terry Maedche, who was working for Kourosh, and also Bob Thompson, who was aerodynamics.

Q Why would Mr. Maedche be interested in the load compressor delta P/P?

A 'Cause he was working on the control system for the APS 3200.

Q The load compressor delta P/P is related to the surge control system of the APS 3200; correct?

A What do you mean by "related to"?

Q It's an aspect of the surge control system; correct? Let me ask it this way. What does the load

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5 (Pages 353 to 356)

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1 compressor delta P/P have to do with the surge control
 2 system, if anything?

3 A As I mentioned in my previous deposition, the
 4 delta P/P is a parameter of the surge control mechanism.
 5 Q So it's part of Mr. Maedche's work on the
 6 control system for the APS 3200. He had a role in the
 7 surge control system of the APS 3200?

8 A What do you mean by "a role"?

9 Q Meaning information that was relevant to his
 10 responsibilities at Sundstrand.

11 A Which information is relevant?

12 Q We were talking about the load compressor delta
 13 P/P.

14 A Okay.

15 Q You said the load compressor delta P/P is a
 16 parameter of the surge control for the APS 3200;
 17 correct?

18 A Correct.

19 Q And Mr. Maedche was involved in the testing of
 20 the APS 3200 control system; correct?

21 A Correct.

22 Q You also copied him on this memo; correct?

23 A Correct.

24 Q So, then, the load compressor delta P/P, as a
 25 parameter of the surge control system of the APS 3200,

1 information received which may or may not be useful to
 2 them. I give them that opportunity of reading the
 3 information and deciding themselves whether this is
 4 useful to them or not. So from my personal point of
 5 view, I provided this to three people for them to
 6 review. What they actually did with that, I do not
 7 know.

8 Q Can you tell me if information regarding the
 9 load compressor delta P/P and its setpoints is used in
 10 testing activity for the APS 3200?

11 A Can you repeat the question, please?

12 MS. REZNIK: Can you read it back, please?

13 (Record read.)

14 MR. McCACKEN: Objection; ambiguous and vague.

15 THE WITNESS: Can you repeat that one more
 16 time?

17 (Record read.)

18 THE WITNESS: What do you mean by information
 19 regarding delta P/P?

20 MS. REZNIK: The information provided in this
 21 coordination memo, Exhibit 69.

22 THE WITNESS: Then I do not know if this
 23 information had any impact on the testing that we did.

24 BY MS. REZNIK:

25 Q I'm not asking you if this particular

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1 was something Mr. Maedche received information about;
 2 correct?

3 A Correct.

4 Q How would Mr. Maedche have used the load
 5 compressor delta P/P information provided in this memo
 6 in his role in the testing of the APS 3200?

7 MR. McCACKEN: Objection; speculative.

8 THE WITNESS: While I'm prepared to talk about
 9 Mr. Maedche's role, I don't know what he did on a daily
 10 basis. I do not know what he did when he received this
 11 memo in 1993.

12 BY MS. REZNIK:

13 Q Can you explain to me how this information
 14 regarding the load compressor delta P/P would have been
 15 used in the testing of the APS 3200 control system?

16 A When you say "would have been used," are you
 17 asking me to -- to state exactly or to speculate?

18 Q State exactly if you can.

19 A Then I do not know how this particular
 20 coordination memo was used.

21 Q But presumably Mr. Maedche was copied on this
 22 document because it was understood that the load
 23 compressor delta P/P information was something useful to
 24 him in some way; correct?

25 A I have a policy of copying people on

1 information had an impact, but is this the kind of
 2 information used in testing, generally, for the APS
 3 3200?

4 A I'm sorry. When you say this kind of
 5 information used generally, I find that difficult to
 6 answer.

7 Q We were just talking about the load compressor
 8 delta P/P and its setpoints, correct, for the APS 3200;
 9 correct?

10 A Yes.

11 Q You've already testified that that information
 12 is a parameter of the surge control system of the APS
 13 3200; correct?

14 A Yes.

15 Q Are you telling me that you don't know whether
 16 or not the parameter of the surge control system of the
 17 APS 3200 is something that is tested as part of the
 18 control system testing of the APS 3200?

19 A The setpoint itself is not tested. The system
 20 is tested with that setpoint to see how well the
 21 setpoint works.

22 Q So, then, it's fair to say that the APS 3200
 23 control system, in its testing, is looking at the ways
 24 in which the setpoint performs as a parameter?

25 MR. McCACKEN: Objection; ambiguous and vague.

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THE WITNESS: AS I mentioned, the APUs are tested with a particular setpoint. That setpoint -- the APU function is evaluated with a particular setpoint. Evaluated meaning tested.

BY MS. REZNIK:

Q So that means that in the testing of the APS 3200, the setpoint would be evaluated, among a bunch of other tests?

A Yes.

Q Do you have Exhibit 230 in front of you, Mr. Suttie?

A I have some paper marked with "Deposition Exhibit 230," yes.

(Plaintiffs' Exhibit 230 was marked for identification by the court reporter.)

BY MS. REZNIK:

Q And Exhibit 230, for the record, is a two-page coordination memo with Bates numbers HSB 030430 through 030431.

MR. McCACKEN: Counsel, I think we have a bit of a mixup, perhaps.

MS. REZNIK: Oh, I'm sorry.

Q Do you have Exhibit 231 in front of you, Mr. Suttie?

A I have an exhibit marked 231, yes.

1 undershoot during MES valve closures."

2 Q Do you understand what the transient testing of
3 the system relates to?

4 A Yes.

5 Q What does it relate to?

6 A The word "transient" means nonsteady state,
7 something that changes. The work that we were doing was
8 moving the aircraft's main engine start, which is the
9 MES valve, and assessing the performance of the APS 3200
10 as a result of the aircraft's MES valve moving.11 Q Was Mr. Maedche conducting the transient
12 testing on this surge system of the APS 3200?13 A As I mentioned earlier, he was the systems
14 engineer requesting testing be accomplished, running the
15 engine.16 Q Was he present during the testing of the APS
17 3200 when he would ask for these tests to be conducted?

18 A I don't know.

19 Q Would a systems engineer asking for such
20 testing generally be part of the testing, meaning he was
21 present -- he would be present -- let me -- let me
22 rephrase it. Would a systems engineer asking for
23 testing generally be present during that testing?24 A Generally that would be the case, but I do not
25 know in this particular instance.

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(Plaintiffs' Exhibit 231 was marked for identification by the court reporter.)

BY MS. REZNIK:

Q And for the record, to be clear, Exhibit 231 should have Bates numbers HSB 030430 through HSB 030431.

Is that what you have in front of you, Mr. Suttie?

A Yes.

Q Do you see at the top of this coordination memo it says that it is from T, period, Maedche?

A Yes.

Q Is that Mr. Terry Maedche?

A Yes.

Q Who is this coordination memo to?

A Gerard Hardy.

Q Is Mr. Hardy -- or was Mr. Hardy an employee at Turbomeca?

A Yes.

Q Can you read the subject of this coordination memo, please?

A Reload compressor delta P on P.

Q Can you read the first line of this coordination memo, please?

A "Transient testing of the surge system at the tailcone with the mock-up aircraft ducting and actual

MES valve has revealed a significant amount of flow."

1 Q As a systems engineer requesting such transient
2 testing on the surge system of the APS 3200, was
3 Mr. Maedche in a supervisory role over those engineers
4 conducting the testing?

5 A Supervisory is not a word I would use or
6 request. But not a supervisor. A peer, not a
7 supervisor.

8 Q "A peer" meaning what?

9 A An equal. Supervisor implies some level of
10 seniority. So he was not in that position.11 Q What was his role as requester of such testing
12 on the APS 3200?

13 MR. McCACKEN: Objection; vague.

14 THE WITNESS: He asked for certain testing to
15 be accomplished, and the test department did it.

16 BY MS. REZNIK:

17 Q Why would he ask for such testing to be
18 accomplished in the first place?19 A As I mentioned earlier, we were trying to
20 evaluate the performance of the APS 3200 control system.21 Q Was it his job to determine which testing would
22 be requested during this testing of the APS 3200 control
23 system?24 A It was not solely his job, but that was part --
25 he was part of a team working on this area of the

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7 (Pages 361 to 364)

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1 program.
 2 Q So part of Mr. Maedche's job as a systems
 3 engineer for the APS 3200 control system was to help
 4 determine which tests would be conducted on the APS 3200
 5 control system?
 6 A To help determine, yes.
 7 Q If you look at the second paragraph of Exhibit
 8 231, it begins with "This memo." Could you read that
 9 line for me?
 10 A "This memo intends to begin a dialogue
 11 regarding surge margin assessment and the" --
 12 Q The whole line.
 13 A The whole line or the whole sentence?
 14 Q The whole sentence. I'm sorry.
 15 A "This memo intends to begin a dialogue
 16 regarding surge margin assessment and the corresponding
 17 impact to set-point selection."
 18 Q What dialogue is it referring to?
 19 A At this time, there was no dialogue stated in
 20 this memo. The writer of this memo was intending to
 21 start the dialogue.
 22 Q Do you know who this dialogue would have been
 23 between or among, or do you know who this dialogue --
 24 that's right. Do you know who this dialogue would have
 25 been between or among?

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1 period, Maedche, correct, along with P.J. Suttie?
 2 A Correct.
 3 Q T, period; Maedche is Terry Maedche; correct?
 4 A Correct.
 5 Q What is the subject of this coordination memo?
 6 A Load compressor control.
 7 Q The first line of this coordination memo reads
 8 that "SPS is looking in detail at the load compressor
 9 control."
 10 A Correct.
 11 Q SPS stands for Sundstrand?
 12 A Stands for Sundstrand Power Systems.
 13 Q If I were to refer to it as Sundstrand, you
 14 understand I'm talking about the same thing?
 15 A Okay.
 16 Q In the middle of this coordination memo it
 17 talks about the problem sequence and bleed on command.
 18 Do you see that in the middle of this coordination memo?
 19 A Bleed on commanded.
 20 Q What is this referring to in regards to the
 21 load compressor control of the APS 3200?
 22 A Sorry. What was the question?
 23 (Record read.)
 24 THE WITNESS: It's referring to a particular
 25 scenario of operation.

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1 A Between Sundstrand and Turbomeca.
 2 Q What was Mr. Maedche's role in this dialogue
 3 regarding surge margin assessment and the corresponding
 4 impact to set-point selection on the APS 3200?
 5 A He was a member of the APS 3200 systems
 6 development team.
 7 Q So as a member of that team, Mr. Maedche would
 8 have been involved in the dialogue regarding the surge
 9 margin assessment and the corresponding impact to
 10 set-point selection on the APS 3200; correct?
 11 A Can you repeat that question, please?
 12 MS. REZNIK: Can you read it back?
 13 (Record read.)
 14 THE WITNESS: Yes.
 15 BY MS. REZNIK:
 16 Q Mr. Suttie, the court reporter has just handed
 17 you what's been marked Exhibit 232. It's a three-page
 18 coordination memo with Bates numbers HSB 035001 through
 19 HSB 035003. Do you have this document in front of you,
 20 Mr. Suttie?
 21 A Yes.
 22 (Plaintiffs' Exhibit 232 was marked for
 23 identification by the court reporter.)
 24 BY MS. REZNIK:
 25 Q This coordination memo says that it's from T,

1 BY MS. REZNIK:
 2 Q Is this memo referring to the load compressor
 3 control of the APS 3200 and specifically the surge
 4 control system?
 5 MR. McCACKEN: I'm sorry. Could you repeat
 6 the question, please?
 7 (Record read.)
 8 THE WITNESS: It's referring to the load
 9 compressor control in general, of which the surge
 10 control is a subset.
 11 BY MS. REZNIK:
 12 Q If you look at the second sentence at the top
 13 of this coordination memo, could you read that for me?
 14 A "Please review this data and provide assistance
 15 as to how the B factor can be modified to prevent this
 16 situation arising."
 17 Q Can you tell me what situation has arisen?
 18 MR. McCACKEN: It must be a humorous
 19 situation.
 20 THE WITNESS: It's a very poorly coord-written
 21 memo. Can you repeat the question, please?
 22 (Record read.)
 23 THE WITNESS: It appears, from reading the
 24 coord memo, that a situation arose that we were not
 25 expecting, that it was possible for the parameter known

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8 (Pages 365 to 368)

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as the B factor, which I had discussed previously, to change as a result of increasing load compressor outlet temperature. And due to that change in the computed B factor, the load compressor control that we had previously discussed could have been enabled or disabled depending on the relative difference between the B and the B critical, which we have computed.

This memo points to an inaccuracy -- a design inaccuracy in the B factor which affected the enabling of the normal bleed control valve -- control signal.

BY MS. REZNIK:

Q Who was responsible for designing this B factor?

A Turbomeca.

Q Do you know who at Turbomeca was responsible for the B factor design?

A In preparation for this deposition, I reviewed some coordination memos, and I saw two names: Pierre Biscay and his supervisor Herbert Vignau.

Q So is it your testimony that these two individuals, Pierre Biscay and Herbert Vignau, were responsible for designing the B factor in the APS 3200?

A In all of the coordination memos and communications I received from Turbomeca, they were represented as the devisers of this system, yes.

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1 until 1996 when we introduced a software version called
2 4.1, which, similar to 3.2, did not use this feature.
3 Version 4.1 is still in service today.

4 MR. McCACKEN: And the subject is covered in
5 detail on pages 249 and 250 of Mr. Suttie's deposition
6 transcript from June 29, 2000.

7 BY MS. REZNIK:

8 Q At this time, the B factor was involved in the
9 surge control system of the APS 3200; correct? I mean,
10 "this time" meaning the time represented in Exhibit 232.

11 A Correct.

12 Q The coordination memo also references IGVs; is
13 that correct?

14 A It mentions IGVs, yes.

15 Q And IGV stands for inlet guide vane; correct?
16 A Correct.

17 Q So this memo from Terry Maedche is providing
18 information regarding IGV testing; is that correct?

19 A No.

20 Q What kind of information is Mr. Maedche
21 providing in this coordination memo?

22 A The memo is from Mr. Maedche and myself. What
23 we were providing here was the load compressor test
24 scenario. We were not testing the IGVs. The IGVs, as I
25 previously stated, are of the architecture of the load

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1 Q Am I correct that this B factor is no longer
2 used in the APS 3200?

3 A Correct.

4 Q Do you know when, approximately, it stopped
5 being used in the APS 3200?

6 MR. McCACKEN: Objection; asked and answered.

7 THE WITNESS: I'm not prepared to answer that
8 today. I have not researched that to know exactly when
9 that was eliminated.

10 MS. REZNIK: I believe that's covered in topic

11 4 and topic 2.

12 MR. McCACKEN: I see your logic in that. I
13 think that he testified on this before. So we would
14 like to see if you have your answer already.

15 MS. REZNIK: Okay.

16 MR. McCACKEN: Can we go off the record for a
17 moment?

18 MS. REZNIK: Sure.

19 (Recess.)

20 THE WITNESS: This mechanism was used in a

21 software version called version 2.0.2. All subsequent
22 versions did not use this feature. As I mentioned in my
23 previous testimony, we introduced a software version
24 called 3.2 in 1995. However, for unrelated reasons, it
25 was withdrawn from service. We went back to using 2.02

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9 (Pages 369 to 372)

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1 (Plaintiffs' Exhibit 233 was marked for
2 identification by the court reporter.)
3 BY MS. REZNIK:
4 Q Exhibit 233 is a coordination memo; correct?
5 A Yes.
6 Q And the coordination memo is authored by T,
7 period, Maedche; correct?
8 A Correct.
9 Q And that refers to Terry Maedche?
10 A Correct.
11 Q What is the subject of this coordination memo?
12 A Load compressor data.
13 Q Can you read the first line of the coordination
14 memo for me, please?
15 A "SPS is currently conducting final surge system
16 development testing, computer" --
17 Q First sentence of the coordination memo,
18 please.
19 A "SPS is currently conducting final surge system
20 development testing, computer simulation correlation,
21 and surge system tolerance analysis."
22 Q Was Mr. Maedche involved in the final surge
23 system development testing referenced in this memo?
24 A He was involved, yes.
25 Q Was Mr. Maedche involved in the computer

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1 A Terry Maedche wrote this coordination memo. As
2 I mentioned previously, he was part of the development
3 team. He was working with others to do this system
4 development. So I can't say for sure whether it was
5 someone else's idea or not.
6 Q When you said "this engineer's request," you
7 were referring to Terry Maedche; correct?
8 A I was referring to the writer of this coord
9 memo, which is Terry Maedche, yes.
10 Q Was Mr. Maedche involved in the surge system
11 tolerance analysis, described in the first sentence of
12 this coordination memo, for the APS 3200?
13 A Yes.
14 Q What is the purpose of surge system tolerance
15 analysis?
16 A When evaluating a system, or any part for that
17 matter, not all components behave exactly the same. We
18 make 100 load compressors. They don't all behave
19 exactly the same. There is a tolerance. To make sure
20 that a system works correctly, you need to allot for
21 that variation between the different pieces of hardware.
22 And so when designing a system with enough allowance for
23 the tolerances -- and so that was what was being done
24 here.
25 The control system has many components. It's

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1 simulation correlation of the APS 3200 related to the
2 load compressor data?
3 A We never had a good computer simulation of this
4 system. So while we may have tried to have correlation
5 between computer analysis and actual test data, it was
6 never successful.
7 Q So it's your testimony that you never did a
8 computer simulation correlation test on the APS 3200?
9 A A computer simulation correlation test, no.
10 That wouldn't be a computer simulation. It would be a
11 computer program, which is intended to simulate real
12 hardware. We never had a good computer model. It's
13 very complicated, and we never had a good model. So we
14 did our system development on engine tests, as I've
15 mentioned to you previously. This was an attempt to get
16 data to do a computer simulation correlation. It was
17 this engineer's request to do this, as stated here, but
18 it's not --
19 Q I'm sorry. Continue.
20 A But we were never very successful at doing
21 simulation of the system.
22 Q You said this was an attempt to get data to do
23 a computer simulation correlation based on the
24 engineer's request. This engineer's request meaning
25 Terry Maedche?

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1 got sensors. It's got the load compressor itself. You
2 need to add up all those tolerances to make sure that
3 the system will always work as required by the
4 customer -- all days, all temperatures, all locations,
5 all altitudes as specified.
6 Q So it was part of Mr. Maedche's job to request
7 these various surge and tolerance analysis tests for the
8 APS 3200?
9 THE WITNESS: Can you repeat that, please?
10 (Record read.)
11 THE WITNESS: There are multiple things there.
12 This was a request for data from Turbomeca. What you
13 also mentioned was testing, which he was not requesting.
14 It was testing that was being carried out in San Diego.
15 So what he was requesting here was basic performance
16 data for the load compressor.
17 BY MS. REZNIK:
18 Q Would Mr. Maedche be involved in analyzing that
19 data?
20 A Typically not a systems engineer. This is
21 primarily performance information which you get from a
22 performance engineer. The only reason the systems
23 engineer would be interested in this is if we were
24 building a simulation -- a computer program that I
25 mentioned previously.

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Q So Mr. Haedche was interested in building this computer simulation correlation for the APS 3200 surge control system; is that correct?

A As I mentioned earlier, this coord memo is from him, asking for that data, but I do not recall if he was asked to do that by somebody else, or whether that was his initiation -- whether he initiated this -- that activity. I actually -- I don't recall.

Q So you can't tell me what his role was in the computer simulation correlation analysis or development; is that correct?

THE WITNESS: Can you repeat that question, please?

(Record read.)

THE WITNESS: No. That's not correct.

BY MS. REZNIK:

Q What's wrong with that statement?

A You included four different topics in there: Computer simulation, analysis, testing, and something else.

Q I believe the question phrases -- it's phrased exactly as what's written here; computer simulation correlation. That's one phrase we were talking about, correct, one type of analysis?

A But that's different from testing or system

answer.

Q Identify which one you are not in a position to tell me.

A The computer simulation correlation. I do not recall that being accomplished.

Q So it's your testimony that you don't know Mr. Haedche's role in this computer simulation correlation because you don't know whether such a correlation took place?

A Yes.

Q The court reporter just handed you what's been marked as Exhibit 234, Bates range numbers HSB 03579 -- HSB 035779 through HSB 035782. Do you have this coordination memo in front of you, Mr. Suttie?

A The last page is 035782. Correct.

(Plaintiffs' Exhibit 234 was marked for identification by the court reporter.)

BY MS. REZNIK:

Q This is a coordination memo regarding the APS 3200 APU between Sundstrand and Turbomeca; correct?

A Correct.

Q What is the subject of this coordination memo?

A Flight V0074 LC transient pressure

fluctuations.

Q LC stands for load compressor; correct?

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tolerance analysis.

Q Right. But my question didn't include those. My question said that you cannot tell me what Mr. Haedche's role was in the computer simulation correlation analysis or development; is that correct?

THE WITNESS: Can you read the original question, please? Because I think that second question is not the same.

(Record read.)

THE WITNESS: Go back to the previous question.

MS. REZNIK: That's the question she read. It was the same.

MR. McCACKEN: Do you understand the question?

THE WITNESS: No.

BY MS. REZNIK:

Q What don't you understand about the question?

A The way I understood the question initially was covering multiple topics, but one part of this that I am not in a position to answer is concerning the computer simulation correlation. Surge system tolerance analysis I've already mentioned he was involved with. Surge system development testing, we've already discussed that he was involved with. So when you roll them all together, as I understood the question, I thought you put three things in one that I was not in a position to

A Correct.

Q This coordination memo is discussing flight testing on the APS 3200; correct?

A Correct.

Q Is it fair to say that this is also analyzing flight testing data?

A I need to read it.

Q Do you want to take some time to just look it over?

A Yes. It appears to be addressing the flight test reserve 74 data.

Q Can you read the first sentence of the coordination memo?

A "There are several indications that the APU surged during flight V0074."

Q This surge that it's talking about is then talking about the surge control system of the APS 3200; correct?

A It's talking about an actual phenomenon -- surge of the load compressor, which the surge control system did not prevent.

Q If you turn to the second page of this coordination memo, can you read the last paragraph that begins with "Go Forward"?

A "Go Forward: Terry Haedche will continue

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1 discussions with DA to determine the force and
 2 subsequent flow differential required to open the check
 3 valve."

4 Q What is "DA" referring to?
 5 A Deutsche Airbus. Our OEM customer.
 6 Q Deutsche Airbus was a customer purchasing the
 7 APS 3200 APU; right?
 8 A They manufactured the airplane and purchased
 9 APS 3200.

10 Q What discussions was Mr. Maedche having with
 11 Airbus at this time?
 12 A I read, solely from these words, that there
 13 appears to have been some question concerning the amount
 14 of force necessary to open an aircraft check valve.
 15 Check valve is a valve which prevents flowing in the
 16 reverse direction.

17 Q Is this check valve an element of the surge
 18 control system on the APS 3200?
 19 A No.

20 Q What is it part of?
 21 A It's part of the airplane. It's part of the
 22 aircraft air duct.

23 Q Does it have an effect on the surge control
 24 system of the APS 3200 in any way?
 25 A No, it doesn't. It's being discussed here

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1 direction, but when there is no flow going this way, the
 2 valve is sprung loaded to close so that flow cannot come
 3 this way. The check valve -- the purpose of the check
 4 valve is to protect the APU from high-pressure air
 5 coming from the main engines..

6 So what is being discussed here is the
 7 fluctuation of -- the check valve opened and closed as a
 8 result of fluctuations in the delivered air from the APS
 9 3200. There is much discussion of the delta P on P
 10 value and the computed B factor. And I see on page 4 of
 11 this memo what I've always called the delta P on P curve
 12 that was supplied by Turbomeca. In this curve, it
 13 blocks delta P on P on the "Y" axis, and on the "X" axis
 14 corrected air flow.

15 In the top left-hand corner of that figure, you
 16 see that it says IGV setting for minus 15 to plus 82
 17 degrees. That is the full range of IGV angles, and that
 18 is why the control system, as implemented in the APS
 19 3200, does not use IGV angles as implemented to the
 20 APU setpoint. As this curve shows, there is no need.
 21 It provides no benefit, no value.

22 So the delta P on P that is being discussed at
 23 value of the "Y" axis -- B factor was used, as I
 24 mentioned before, to determine which side of the -- this
 25 curve we were on to enable or disable surge control

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1 because it is possible for that valve to move as a
 2 result of APU behavior, but it does not affect the other
 3 way around. It's a valve in the aircraft.

4 Q The subsequent flow differential that is
 5 referring, what is that?
 6 A As a result of any -- it's not absolutely clear
 7 to me what-all is meant by this -- this word -- these
 8 words.

9 Q If you look at the conclusion of this
 10 coordination memo, can you describe for me what the
 11 conclusion of this memo is?
 12 A The conclusion is a discussion -- one side of a
 13 discussion that Sundstrand was having with Turbomeca as
 14 to what was happening in some flight test data. It
 15 appears to have been -- and there is a reference to a
 16 previous coordination memo from Turbomeca making some
 17 statements which is disagreeing with.

18 Q Does this conclusion discuss the delta P/P
 19 parameter of the surge control system of the APS 3200?
 20 A While delta P on P is mentioned here a number
 21 of times, the issue that was being discussed was one of
 22 an interaction between the APU and the aircraft, and the
 23 fact that there were fluctuations in the amount of flow
 24 being delivered by the APU was causing an aircraft check
 25 valve -- a check valve can be blown open in one

1 computation of B factor and B critical value.

2 So this is the discussion of some events which
 3 had occurred at flight testing in Toulouse. I had
 4 mentioned that Terry Maedche was our support person for
 5 that flight test campaign. He was a resident in France
 6 for about three months, and that is why his name is
 7 mentioned as continuing discussions with DA, because he
 8 was in Europe at the time.

9 Q So, then, is it your understanding that the
 10 subsequent topics they are talking about is this delta
 11 P/P curve that we just talked about?

12 A I think specifically what I would read from
 13 this, as a systems engineer by background, that when we
 14 have the valve and it's closed, to blow it open takes
 15 some amount of energy. So I -- to determine the
 16 force -- the force to open it and the subsequent flow
 17 differential, because there is some pressure drop across
 18 that valve, that is what I think he means here.

19 Q Okay.

20 A That's how I would interpret it.

21 Q If you look at page 3 of this memo, HSB 035781,
 22 can you read that?

23 A "In addition, Terry would like to visit
 24 Turbomeca as soon as additional A/C flight test data is
 25 available to discuss the cause and solution of this

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12 (Pages 381 to 384)

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anomaly."

Q The anomaly that Mr. Maedche was going to be assessing relates to the incident of surge during this flight test; correct?

A Well, this coord memo doesn't -- this coord memo indicates that Edelman believes surge was taking place, but that is not necessarily the case. When flight test data is obtained and an anomaly occurs, it's the job of the engineers working on the program to try to understand actually what's happened. This was Ed's suggestion, I think. If we read on, "I believe the APU surges upon closure of the check valve," it would be typical of somebody hypothesizing, but not being absolutely a proven fact at that point.

And so the anomaly is, as I mentioned, the check valve. The aircraft check valve is banging open and closed as a result of fluctuations in the air. That is not an event which meets the specification as provided by our customer.

Q Right.

A And so we were trying to understand why it was happening, and this, you can see, is an exchange between Sundstrand and Turbomeca hypothesizing comments, trying to analyze the situation.

Q Right. My question is would Terry Maedche, in

his discussions with Turbomeca, have discussed the indications that APU -- that the APU may have surged during flight?

A He would have discussed the data as discovered, the raw data, and also the conclusions drawn by Edelman here, yes.

Q Mr. Suttie, you've just been handed what's been marked as Exhibit 235, which is a coordination memo regarding the APS 3200 between Turbomeca and Sundstrand. The Bates number is HSB 035838. Do you have that in front of you?

A Yes.

(Plaintiffs' Exhibit 235 was marked for identification by the court reporter.)

BY MS. REZNIK:

Q Who is the author of this coordination memo?

A Terry Maedche.

Q What is the subject of this memo?

A IGV min. position.

Q Can you read the first sentence of this coordination memo, please?

A We have compared S/W versions 1.0.1.d to S/W 2.0 by conducting a test in the tailcone and we confirm the difference in the IGV min. position."

Q The software versions mentioned relate to the

software used in the control system of the APS 3200; correct?

A Yes.

Q Does that software include the surge control system of the APS 3200?

A Yes.

Q So is it fair to say that Mr. Maedche was responsible for comparing the software versions as referenced in this coordination memo?

A No. The software versions are complex. They control many things. This was a narrow subset of those software programs. And so he was not comparing the whole version. He was just comparing IGV min. position, which is just one particular number. So it's a very small subset of the overall features.

Q Is the IGV min. position part of the surge control system of the APS 3200?

A No.

Q What is that part of?

A IGV has a separate control system. So this is part of the IGV control system. It was -- as I mentioned before, those two are independent.

Q So Mr. Maedche's role was to compare the software versions referenced in this coordination memo, in Exhibit 235, relating to the IGV min. position; is

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that correct?

A Can I read the whole thing?

Q Sure.

A Do you want me to describe what was going on here?

Q Well, can you answer the question?

THE WITNESS: Can you repeat the question, please?

(Record read.)

THE WITNESS: Yes.

BY MS. REZNIK:

Q Mr. Suttie, you've been handed what the court reporter just marked Exhibit 236, with Bates number HSB 035839. Do you have that in front of you?

A 035839, yes.

(Plaintiffs' Exhibit 236 was marked for identification by the court reporter.)

BY MS. REZNIK:

Q This is a coordination memo between Turbomeca and Sundstrand regarding the APS 3200 APU; correct?

A Yes.

Q Who is the author of this coordination memo?

A Terry Maedche.

Q What's the subject of this memo?

A IGV position compensation in software version

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1 2.0.

2 Q Can you read the second sentence of this
 3 coordination memo, please?

4 A "I conducted a test here in the tail section
 5 and compared the 1.0.1.d software to the 2.0 software at
 6 the maximum IGV position. I observed" -- "at the
 7 maximum IGV position and I observed a 1 degree position
 8 difference."

9 Q Can you also read the last sentence of this
 10 coordination memo, please?

11 A "In summary" -- the last sentence or the last
 12 paragraph?

13 Q Last sentence.

14 A "Therefore we intend to leave the software 2.0
 15 version as it is because the BITE tolerance enhancement
 16 outweighs the impact to performance."

17 Q Is it fair to say, then, that Mr. Maedche was
 18 involved in software version 2.0 of the APS 3200?

19 MR. McCACKEN: Objection; ambiguous and vague.
 20 THE WITNESS: This coord memo says that he ran
 21 some tests, evaluated a particular IGV angle, and
 22 decided to make no change.

23 BY MS. REZNIK:

24 Q So, then, that would be yes, he was involved in
 25 the software 2.0 version?

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1 software 2.0 worked? Let me rephrase that.

2 Mr. Maedche -- Mr. Maedche's role was to evaluate how
 3 software 2.0 behaved; is that correct?

4 A As I read this coord memo, yes. It appears
 5 that Turbomeca had asked the question relating to the
 6 IGV positioning by the software -- by our control
 7 system -- Sundstrand's control system. I mentioned
 8 previously there was an interface control document
 9 between the two companies to define how the control
 10 system would control the APU.

11 Q So, then, Mr. Maedche was involved in the
 12 evaluation of this 2.0 version of software that relates
 13 to the IGV position in the APS 3200 control system;
 14 correct?

15 A Yes.

16 Q The court reporter just handed you what's been
 17 marked as Exhibit 237, I believe. Bates range numbers
 18 HSB 110069 through HSB 110103. Do you have that
 19 document in front of you?

20 A I have a document with those outside HSB
 21 numbers, yes.

22 (Plaintiffs' Exhibit 237 was marked for
 23 identification by the court reporter.)

24 BY MS. REZNIK:

25 Q Turning to the third page of this document, HSB

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1 A What do you mean by "involved"?

2 Q You just described that he made some decisions
 3 regarding the software 2.0 version; correct?

4 A Choosing not to change something doesn't imply
 5 involvement.

6 Q It doesn't? How does it not imply involvement?
 7 If he were to make the decision to change it, would that
 8 be involvement?

9 A How a change would be made, I would consider
 10 that involvement, yes.

11 Q But you are saying because he decided not to
 12 make a change, that that wasn't involvement?

13 A See, this particular parameter, which is the
 14 IGV opening angle, was defined in software version 2.0,
 15 and I don't know whether -- I don't know who did that.
 16 This is an evaluation of how -- of how that version of
 17 software behaved. It's semantics on the word

18 involvement to me. I don't -- I don't see it to not
 19 change something. I would say he was involved if he had
 20 made a positive change. This is not a positive change.

21 Q So how would you describe his role in the
 22 software 2.0 version? If not involvement, what word
 23 would you use?

24 A Evaluated how it behaved.

25 Q So Mr. Maedche's role was to evaluate how

1 110071, tell me what the subject of this document is.

2 A APS 3200 software version 0.1.7. Is that the
 3 right page?

4 Q Yes. Can you see that Mr. Maedche is copied on
 5 this document?

6 A Yes.

7 Q Does the APS 3200 version 0.1.7 include the
 8 surge control system of the APS 3200?

9 A Yes.

10 Q The court reporter just handed you what's been
 11 marked as Exhibit 238, with Bates range numbers HSB
 12 145334 through HSB 145357. Do you have that document in
 13 front of you?

14 A I have a document with those Bates numbers,
 15 yes.

16 (Plaintiffs' Exhibit 238 was marked for
 17 identification by the court reporter.)

18 BY MS. REZNIK:

19 Q Can you turn to the second page of this
 20 document? What is this document?

21 A It's an engine report titled "APS 3200 ECB/APU
 22 Integration Test Plan."

23 Q And it's dated January 30, 1993; correct?

24 A Correct.

25 Q Can you see that this document was copied to

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Mr. Maedche, if you look back at the page we were just looking at?

3 A Yes.

4 Q At the top it says "Copy Assignment," and then
5 it says "Assigned To," and then it lists these various
6 individuals, including Mr. Maedche; correct?

7 A Correct.

8 Q What does "Assigned To" refer to?

9 A A copy was provided to. There is no
10 requirement. The word "assigned" doesn't mean they had
11 to do anything. It was only copied to.

12 Q Okay. The purpose of this document was to
13 describe critical safety tests to be performed on the
14 APS 3200 engine and controller for each of the software;
15 correct?

16 THE WITNESS: Can you repeat the question,
17 please?

18 (Record read.)

19 THE WITNESS: Yes.

20 BY MS. REZNIK:

21 Q Mr. Maedche was involved in the testing of this
22 APS 3200?

23 MR. McCACKEN: Objection; ambiguous.

24 MS. REZNIK: Let me rephrase it, actually.

25 Q Was Mr. Maedche involved in these safety tests

1 of the controller to control the load compressor when
2 the aircraft demand was changing. It was a transient.
3 The flight tests were far broader in reach. They were
4 testing the capability of the APU and all features of
5 its performance: Installation, operation, fault
6 detection, a complete function of the unit in the
7 installed airplane. So there's two different tests in
8 your question, and they are different.

9 BY MS. REZNIK:

10 Q So what is the answer to the transient
11 evaluation load tests? Was -- let me rephrase it. Hold
12 on. Did these transient evaluation load tests involve
13 testing of the surge control system on the APS 3200?

14 A As I mentioned a minute ago, it involves:
15 testing the load compressor in simulating environment,
16 simulating the aircraft, changing the nature of the
17 aircraft, the amount of air required by the aircraft,
18 different modes of operation, main engine start mode,
19 environmental start system control mode. So that was
20 for that transient test that we have discussed.

21 Q So this transient test is measuring the air
22 flow through the load compressor -- or the requirements
23 of air flow through the load compressor?

24 A It's measuring the function of the load
25 compressor, which partially is air flow, but it's also

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for the APS 3200?

2 MR. McCACKEN: Objection; ambiguous.

3 THE WITNESS: I do not know if Terry Maedche
4 ever did a safety test. This is a specific test that we
5 used prior to taking a software version to a customer or
6 to some critical operation. It just proves that the
7 software is safe for use outside. And so it's a
8 specific procedure which we try to document so we follow
9 the same procedure every time. I do not know if
10 Mr. Maedche ever ran that test.

11 BY MS. REZNIK:

12 Q Can you describe what types of tests

13 Mr. Maedche was involved in for the APS 3200?

14 A We discussed earlier there was the transient
15 evaluation tests. He supported the flight tests. Those
16 are the only tests that I recall him being involved
17 with.

18 Q Did these transient evaluation load tests and
19 flight tests involve testing of the surge control system
20 on the APS 3200?

21 MR. McCACKEN: Can you read the question back,
22 please?

23 (Record read.)

24 THE WITNESS: Two different tests mentioned
25 there. The transient evaluation was testing the ability

1 looking for consistency of air flow. There is no
2 indication that the air was stopped and started, and
3 also that the load compressor would function as required
4 by the specification.

5 Q This transient air flow through load compressor
6 relates to the delta P/P parameter; correct?

7 MR. McCACKEN: Objection; ambiguous and vague.

8 THE WITNESS: The transient refers to the
9 position of aircraft components such as valves on the
10 main engine start valve or the ECS start valve. What
11 that does is it changes the operating point of the load
12 compressor, as you showed in one of your earlier
13 figures, the figure that I called the delta P on P
14 curve. So as the aircraft transient requirements
15 change, so the air flow through the load compressor
16 changes, yes.

17 BY MS. REZNIK:

18 Q So the air flow through the load compressor
19 relates to this delta P/P parameter; correct?

20 MR. McCACKEN: Objection; asked and answered,
21 and this subject matter was addressed fully in his
22 previous deposition.

23 THE WITNESS: Either relationship of the curve
24 that you showed earlier -- the air flow through the load
25 compressor has a relationship to delta P and P, as

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15 (Pages 393 to 396)

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1 mentioned in your figure. I don't know the exhibit
2 number.

3 BY MS. REZNIK:

4 Q So that would be yes, the air flow through the
5 load compressor does have a relationship to delta P/P as
6 we've already discussed?

7 MR. McCACKEN: Objection; asked and answered.

8 THE WITNESS: The measure of delta P and P static
9 that we have discussed before, yes.

10 BY MS. REZNIK:

11 Q So these transient evaluation load tests that
12 Mr. Maedche was involved in directly were looking at the
13 ability of the load compressor to deal with various air
14 flow measurements; is that correct?

15 A No. The transient tests were changes in demand
16 from the aircraft that causes the load compressor to
17 change the operating -- the amount of air flow changes,
18 and the control system needs to adapt appropriately, and
19 we were testing the appropriateness of that adaption.

20 Q So Mr. Maedche was involved in that testing
21 relating to the adaption of the load compressor
22 controls?

23 A Yes.

24 Q You've just been handed by the court reporter
25 what's been marked as Exhibit 239, with Bates range

1 to the bleed control valve of the APS 3200 at this time?

2 A Can I read it?

3 Q Sure.

4 (Record read.)

5 THE WITNESS: Yes.

6 BY MS. REZNIK:

7 Q The court reporter has just handed you what's
8 been marked as Exhibit 240, with Bates numbers HSB
9 195355 through 195363. Do you have that exhibit in
10 front of you?

11 A I have a document with those HSB numbers on the
12 outside of the document, yes.

13 (Plaintiffs' Exhibit 240 was marked for
14 identification by the court reporter.)

15 BY MS. REZNIK:

16 Q Can you tell me what the subject of this memo
17 is?

18 A APS 3200 minutes of the technical coordination
19 meeting at Deutsche Aerospace Airbus, Hamburg, August
20 11th through 12th, 1993.

21 Q Can you read the first sentence of this memo?

22 A "The meeting was represented" -- "requested" --
23 sorry -- "by DA to review pending issues of the
24 qualification program of the APS 3200 as well as the
25 actions resulting from the development and certification

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1 numbers HSB 260155 through 260156. Do you have that in
2 front of you, Mr. Suttie?

3 A Yes.

4 (Plaintiffs' Exhibit 239 was marked for
5 identification by the court reporter.)

6 BY MS. REZNIK:

7 Q This is a memo from Mr. Mehr-Ayin to you; is
8 that correct?

9 A Correct.

10 Q Do you see that this memo was copied to
11 Mr. Maedche?

12 A Yes.

13 Q What's the subject of this memo?

14 A B factor calculations.

15 Q The B factor calculations related at one point
16 to the delta P/P parameter in the APS 3200; is that
17 correct?

18 A No.

19 Q What does the B factor relate to? Just refresh
my memory.

20 A The B factor is an analog test which enables
21 controls or disables controls.

22 Q Of?

23 A The bleed control valve.

24 Q So this B factor calculations memo was relating

1 flight tests."

2 Q If you turn to the next page of this memo,
3 "Attachment 1," can you see that this lists the
4 attendees of this meeting?

5 A Yes.

6 Q Mr. Maedche was present at this meeting;
7 correct?

8 A Yes.

9 Q You were also present?

10 A Yes.

11 Q Turn to the next page, which is "Attachment 2"
12 of this coordination memo -- or coordination meeting
13 memo. It lists the agenda; correct?

14 A Yes.

15 Q The qualification status of the 3200 was
16 discussed; correct?

17 A Qualification status, yes.

18 Q Flight test of the APS 3200 was discussed;
19 correct?

20 A Yes.

21 Q And the ECB evolution, as noted in topic 3 here
22 of the memo, was discussed at this meeting; correct?

23 A Yes.

24 Q The ECB evolution appears to have involved
25 various software versions for the APS 3200 control

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system; is that correct?

A It mentions multiple different versions, yes.

Q And all of these software versions relate to the control system of the APS 3200; correct?

A Correct.

Q This control system includes the surge control system of the APS 3200; correct?

A Correct.

Q It also includes the fuel control system of the APS 3200; correct?

A Correct.

Q The court reporter just handed you what's been marked as Exhibit 241, with Bates numbers HSA 196281 through 196284. Do you see that, Mr. Suttie?

A 196281 and the last page is 196284?

Q Yes.

A Yes.

(Plaintiffs' Exhibit 241 was marked for identification by the court reporter.)

BY MS. REZNIK:

Q This appears to be a memo from Steve Gates; correct?

A Yes.

Q And the subject is the APS 3200; correct?

A Yes.

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403

Q Can you read the first sentence of this memo?

A "Today's meeting began with a group discussion between DA and SPS/APIC regarding installation issues. Please see attached sheet."

Q It's your understanding that it's talking about installation issues regarding the APS 3200; correct?

A Yes.

Q Turn to the third page of this memo, HSA 196283 -- oh, actually turn to the last page, 196284. Can you read the last paragraph, to the best you can, of this memo?

A "Mr. Neufert wants to know when exactly serial number 0011 ECB will be returned to DA. He wants it to be returned with the latest software pair TA007. They also need an OBRM for serial number 0013 with this same software in order to support ground testing. Please send this to Terry Maedche. Action: Suttie."

Q What is "OBRM"?

A On board replaceable module. It's a small cartridge which holds all of the operational software. To change software of any controller, which is a box, you just take out the cartridge, reprogram it, and put it back in again.

Q So this OBRM contains within it the controls logic for the APS 3200?

A It's -- yes. Contains memory devices which have imbedded in the memory all of the control features of the control system.

Q So it says on this memo that OBRM is being sent to Terry Maedche; is that correct?

A Yes.

Q Do you know what Mr. Maedche is supposed to do with that OBRM?

A He was a resident in Toulouse at the time, so we were using him as a go-between so that we could send our hardware to a known person who would then install it in these two different ECBS that is referenced here, 11 and 13. We were solely using him 'cause he was in France rather than trying to send it to somebody at Airbus we didn't know or it could get lost. It was a safe mechanism for Federal Express or whatever overnight mail delivery system we used.

Q So when this OBRM system was being sent to Mr. Maedche, he was supposed to install that into the APU in Toulouse?

A Into the electronic control box in Toulouse, like a technician. It's just an installer.

Q You've just been handed what's been marked as Exhibit 242, HSA 211142 through 211149. Do you have that in front of you, Mr. Suttie?

A Yes.

(Plaintiffs' Exhibit 242 was marked for identification by the court reporter.)

BY MS. REZNIK:

Q What is this document?

A APS 3200, engineering report, surge margin throughout operating envelope, reference number 332-0212.

Q It's dated March 26th, 1993; correct?

A Correct.

Q If you look at 1.0 of this document --

A Say again?

Q 1.0. It's on page 4.

A Section 1.0?

Q Yeah. Sorry.

A Okay.

Q Can you read the paragraph?

A "1.0, Scope. According to requirement of para 5.5 of TSO-C77a and paragraph 5.5.1 of JAR-APU change 2, this document provides analysis showing that the compressors of the APIC APS 3200 auxiliary power unit, parentheses, APU, can operate with convenient surge margin throughout the APU specified operating envelope. The APU operating envelope is defined according to APS 3200 model specification ref d."

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1 Q If you look down to 4.0, it reads "Load
2 Compressor Stability/Surge Control"; correct?
3 A Uh-huh.
4 Q And it describes the load compressor surge
5 control, doesn't it, on the APS 3200?
6 A It mentions the load compressor control --
7 surge control based upon the existence of a unique curve
8 relating to the following parameter, delta P on P and
9 air flow, yes.
10 Q If you look to the front page of this once
11 again, 211142 --
12 A Yes.
13 Q -- do you see that Mr. Maedche is copied on this
14 document?
15 A Yes, I do.
16 Q You've just been handed what's been marked
17 Exhibit 243, Bates numbers HSA 211218 through 211226.
18 Do you see this document?
19 A 211226, yes.
20 (Plaintiffs' Exhibit 243 was marked for
21 identification by the court reporter.)
22 BY MS. REZNIK:
23 Q This is a coordination memo regarding APS 3200
24 between Turbomeca and Sundstrand; correct?
25 A Yes.

405

1 Q And it attaches a different memo; correct?
2 A Yes.
3 Q What is the memo that's attached?
4 A A memo from Ed Edelman concerning the APS 3200
5 EGT limit start setpoint modification for hot day
6 operation.
7 Q Does this EGT limit start setpoint relate to
8 the fuel control system of the APS 3200?
9 A No.
10 Q It has no connection to the fuel control system
11 of the APS 3200?
12 A No.
13 Q Okay. Does this EGT limit start have any
14 relationship to the control system?
15 A No.
16 Q Okay.
17 A Can I look at that again, please?
18 Q Sure.
19 A I misread the subject of this. I took it to be
20 EGT control for start state, but EGT limit start
21 setpoint modification means that it is used for starting
22 the APU. As a result -- I apologize -- it does affect
23 fuel control.
24 Q So to be clear, we are talking about Exhibit
25 243, and it's your understanding that this memo does

1 relate to the fuel control system?
2 A During start of the APU, yes. I apologize.
3 Q Do you see that Mr. Maedche is copied on this
4 document?
5 A Yes.
6 Q You've just been handed what's been marked as
7 Exhibit 244, which is a coordination memo with Bates
8 numbers HSA 211379 through 80. Do you have that in
9 front of you?
10 A Yes.
11 (Plaintiffs' Exhibit 244 was marked for
12 identification by the court reporter.)
13 BY MS. REZNIK:
14 Q This is a coordination memo regarding the APS
15 3000 APU between Turbomeca and Sundstrand; is that
16 correct?
17 A This relates to the 3200. This was just a
18 preprinted paper which would be -- presumably the
19 individual who wrote this didn't normally write coord
20 memos, and I would suspect that he had a pile of paper
21 and just used an old form. If you look at the date,
22 it's 1993. We were clearly calling it the APS 3200 at
23 that time. So this relates to the APS 3200.
24 Q Okay. When did you start calling it the APS
25 3200 as opposed to the APS 3000?

407

1 MR. McCACKEN: Objection; asked and answered
2 in his previous deposition.
3 THE WITNESS: I didn't prepare for this, but as
4 I recall, it was 1990 -- in the 1990 time frame, long
5 before this coord memo.
6 BY MS. REZNIK:
7 Q What's the subject of this coordination memo?
8 A IGV schedule with ECS minimum demand.
9 Q And can you read the first sentence?
10 A Please find enclosed a new, in parentheses,
11 proposition for IGV setting versus inlet temperature for
12 0 percent.
13 Q It says that this memo is from P, period,
14 Marconi; correct?
15 A Correct.
16 Q Is that someone from Turbomeca?
17 A Yes.
18 Q So someone from Turbomeca was providing
19 Sundstrand information regarding the IGV setting?
20 A Yes.
21 Q Do you see that Mr. Maedche is copied on this
22 document?
23 A Yes.
24 Q Would IGV schedule with ECS minimum demand, the
25 subject of this memo, have any impact on the transient

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evaluation load testing of the APS 3200?

MR. McCACKEN: Objection; ambiguous and vague.
MS. REZNIK: I believe you were beginning to answer.

THE WITNESS: No.

BY MS. REZNIK:

Q Okay. Would the IGV schedule with the ECS have anything to do with the flight testing of the APS 3200?

A During the flight test, the APU performance ECS minimum demand would have been evaluated.

Q So that means yes; the IGV schedule that ECS may demand would have been evaluated in the course of flight testing for the APS 3200?

A From a study test performance point of view, yes, not a transient issue.

Q Okay. You've just been handed what's been marked Exhibit 245, Bates numbers HSA 226334 through HSA 226339. Do you have those in front of you?

A I have a document with those HSA numbers on the front and back page; yes.

(Plaintiffs' Exhibit 245 was marked for identification by the court reporter.)

BY MS. REZNIK:

Q Do you see it is some sort of a handwritten memo by Mr. Maedche?

409

1 A "So the question becomes why is the control logic faked out or trying to go open to load when we are
2 certain the aircraft has dead-headed the bleed duct?"
3 Q You can skip ahead to the sentence that begins
4 with "I recommend." Can you read that? It's at the end
5 of the paragraph.

6 A "I recommend making the load compressor surge
7 and immediately after open all downstream restriction
8 e.g. this will be an attempt to set up the high flow
9 condition and see if the B factor gets lost after a
10 surge."

11 Q So here Mr. Maedche is making recommendations
12 regarding the load compressor surge in the APS 3200?

13 A To read his words exactly, "I recommend making
14 the load compressor surge" is a meaningless statement.
15 It needed some more nouns after that for it to be of
16 value. "I recommend making the load compressor surge."

17 Q Okay. Let me rephrase it, then. It's clear
18 that Mr. Maedche was making a recommendation about
19 testing and evaluating the load compressor; is that
20 correct?

21 A I apologize. Can you read the question? I'm
22 trying to understand what he said.

23 (Record read.)

24 THE WITNESS: It appears that he was

411

1 A Yes.

2 Q What's the subject of this memo?

3 A BCV cycling problem.

4 Q What is the BCV cycling problem referring to?

5 A I would need to read it. BCV cycling is when
6 it moves and moves again and moves again in a cycling
7 movement.

8 Q The BCV refers to the bleed control valve?

9 A Correct.

10 Q And this would be the bleed control valve on
11 the APS 3200?

12 A Yes.

13 Q Starting in the middle of the paragraph with
14 "Subsequently," do you see that sentence?

15 A Yes.

16 Q Could you read that sentence?

17 A "Subsequently, the control logic either goes on
18 control or open to load, depending on the state of the B
19 factor and delta P/P."

20 Q So here Mr. Maedche is discussing the control
21 logic on the APS 3200 relating to this B factor and
22 delta P/P?

23 A Yes.

24 Q He then asks a question after that. Can you
25 read that?

410

1 A recommending something, though. As I say, I don't
2 really understand "making the load compressor surge."
3 Okay? That's an event. If I can turn around and look
4 at it in a different way, "and immediately after open
5 all downstream restriction," that's not something that
6 we had control over. "This will be an attempt to set up
7 the high flow condition and see if the B factor gets
8 lost."

9 BY MS. REZNIK:

10 Q So what kind of recommendation was Mr. Maedche
11 making to you in this memo?

12 A I understand this to be -- he was recommending
13 running a test. Actually the part -- the tailcone
14 implies that that's where he was thinking we should do
15 this test, to try and recreate the situation which had
16 been occurring and see if the B factor, which we talked
17 about before, functioned adequately or not.

18 Q So these recommendations are directed at the
19 testing of the bleed control valve of the APS 3200;
20 correct?

21 A No. He's recommending doing a system-wide test
22 and measuring certain data during that test.

23 Q But the subject of the memo is a bleed control
24 valve cycling problem; correct?

25 A That's the subject, yes.

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19 (Pages 409 to 412)

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1 Q And the tests he's recommending include making
2 the load compressor surge; correct?
3 A Apparently that's what he was suggesting.
4 Q So, then, his testing recommendations relate to
5 load compressor surge and the bleed control valve of the
6 APS 3200; correct?
7 A Can I read the whole thing? I missed certain
8 parts. You only had me read certain sections, so I
9 don't know what the other parts say.
10 Q Sure.
11 A This was his recommendation: Setting up a test
12 that we could do at sea level on our tailcone test
13 fixture to try and reproduce this phenomenon which had
14 occurred at 20,000 feet, and that phenomenon was bleed
15 control valve cycling.
16 Q This memo also specifically refers to control
17 logic depending on the state of the B factor to delta
18 P/P; correct?
19 A It's not B factor "to" delta P/P; It's "and."
20 Q That's an and?
21 A That's an and.
22 Q This memo specifically refers to control logic
23 depending on the state of the B factor and delta P/P;
24 correct?
25 A Yes.

1 Q It's dated January 11, 1993; correct?
2 A Correct.
3 Q If you turn to 226468, you'll see a diagram;
4 correct?
5 A Yes.
6 Q And this diagram depicts a load compressor
7 surge control; correct?
8 A It depicts a control logic where the input is
9 delta P on P and the output is LDCMD.
10 Q The title of this diagram is under "APS 3200
11 Qualification Software 0.1.5 Load Compressor Surge
12 Control"?
13 A Yes.
14 Q So it's fair to say this is depicting the
15 control logic for the load compressor surge control in
16 this software version?
17 A Yes.
18 Q If you look at the front of this memo again,
19 you'll see that it's copied to Mr. Maedche; correct?
20 A Yes.
21 Q So Mr. Maedche was provided information on the
22 software version 0.1.5 along with this diagram of the
23 load compressor surge control; correct?
24 A Yes.
25 Q Was Mr. Maedche involved in this software

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415

1 Q This is information being provided to you from
2 Mr. Maedche, correct, relating to the B factor and delta
3 P/P; correct?
4 A This was at a time he was in Toulouse. He was
5 getting the data in European time and analyzing it and
6 writing memos back to us based on his review of the
7 flight test data. So I think the answer to your
8 question is yes: I'm just adding that's why he was
9 doing this, because of his geographical location at the
10 time.
11 Q And this information provided relates to the
12 APS 3200; correct?
13 A Yes.
14 Q The court reporter just handed you what's been
15 marked as Exhibit 246. It's a memo with Bates range
16 numbers HSA 226464 through 226472. Do you have this
17 document in front of you, Mr. Suttie?
18 A Yes. I have a document with those Bates
19 numbers on the front and back page.
20 (Plaintiffs' Exhibit 246 was marked for
21 identification by the court reporter.)
22 BY MS. REZNIK:
23 Q And the subject of this memo is APS 3200
24 software version 0.1.5; correct?
25 A Correct.

1 version?
2 MR. McCACKEN: Objection; ambiguous and vague.
3 THE WITNESS: What do you mean by "involved"?
4 BY MS. REZNIK:
5 Q Did he have any role in the design or
6 development of this particular software version?
7 A This particular version, I don't recall.
8 Q Did he have any role in any software version of
9 the APS 3200 that you can recall?
10 MR. McCACKEN: Objection; ambiguous and vague.
11 THE WITNESS: What do you mean by "role"?
12 BY MS. REZNIK:
13 Q Did he make any contribution to the software
14 version at all?
15 A We discussed already that he tested some
16 version of software. He made statements on their
17 effectiveness.
18 Q So, then, that would be yes, he was involved in
19 the development of certain software versions; correct?
20 MR. McCACKEN: Objection; ambiguous and vague.
21 THE WITNESS: I can't say whether he input
22 anything which caused those versions of software to be
23 different in any way.
24 BY MS. REZNIK:
25 Q You can't say that?

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A I can't say that. He may have. I did not, in my research of this, find any evidence where he had done that.

Q You are saying you don't know for sure whether or not he may have had an input into certain software versions?

A He was a control systems engineer working on the program at a late stage. As you can see, pretty much of the development had already been done. As we established early, he was only recently with us at this point in time. I worked with him. He was -- it's my recollection that he did have input to some version of software, but I can't be specific as to what they were -- the version of software, nor the specific input that he may have had.

Q Can you tell me the type of input he would have had in the software versions?

MR. McCACKEN: Objection; speculative.

THE WITNESS: No, I can't.

BY MS. REZNIK:

Q And you are unable to do that because you just simply don't know what those inputs would have been; is that correct?

A Correct.

MS. REZNIK: For the record, I'd just like to

say that I think the topics of the 30(b)(6) deposition notice specifically do require him to have the answers to those questions, and I don't believe he has those answers.

MR. McCACKEN: I believe that he has researched them to the best of his ability, and he's answering them to the full extent of his cooperation and knowledge.

BY MS. REZNIK:

Q So it's the corporation's testimony that it has no idea what the input Mr. Maedche would have had or may have had in these software versions is? Mr. Suttie, that's a question directed at you, I guess.

A In my research of what he has done, I didn't find specifics as to any version of software he may have had input to, or specifically if he had any input, on what that might have been.

Q So it's your testimony Sundstrand can't tell us any specifics about what Mr. Maedche may have worked on with respect to software versions in the control system of the APS 3200; is that correct?

A Yes.

Q But you can tell me that you know that he did have input into some software version of the APS 3200 control system; is that correct?

1 MR. McCACKEN: Objection; asked and answered.
2 THE WITNESS: My research to date shows the
3 input that I found that he documented, that he had
4 comments he had made, testing that he had witnessed, but
5 I did not find any specific changes in software that
6 were made by him.

7 BY MS. REZNIK:

8 Q But, again, the corporation can't be sure about
9 any specific changes that Mr. Maedche may have made?

10 A We didn't find any evidence.

11 Q Is that yes, you are not aware of any
12 specifics -- well, let me rephrase it. The corporation
13 didn't find any evidence -- you said that the
14 corporation didn't have any evidence. Does that mean
15 the corporation believes he did not have any input into
16 any software version of the APS 3200? "He" meaning
17 Mr. Maedche.

18 MR. McCACKEN: Objection; asked and answered.

19 THE WITNESS: In my research, I could not find
20 any evidence of events in which he had made changes to
21 various software versions.

22 BY MS. REZNIK:

23 Q But you earlier said that he may have made some
24 input. You just weren't sure about the specifics;
25 correct?

417

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1 A He may have. I'm speaking from my own
2 recollection.

3 MR. McCACKEN: Do you need a short break, or
4 would you like to go on?

5 THE WITNESS: Sure.

6 MS. REZNIK: Let's take a short break.
(Lunch recess taken from 12:11 p.m. to 1:15
p.m.)

7 BY MS. REZNIK:

8 Q The court reporter just handed you what's been
9 marked Exhibit 247. It's a memo with Bates numbers KSA
10 351507 through 514. Do you have that document in front
11 of you, Mr. Suttie?

12 A Yes.

13 (Plaintiffs' Exhibit 247 was marked for
identification by the court reporter.)

14 BY MS. REZNIK:

15 Q Okay. Now, this is a memo from Ed Edelman
16 regarding the software version 1.0.1 definition;
17 correct?

18 A Correct.

19 Q That's dated April 5th, 1993; correct?

20 A Correct.

21 Q Within this software version definition
22 document, there is a diagram relating to load compressor

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21 (Pages 417 to 420)

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1 surge control; correct?
 2 A Page 3 of 4, yes.
 3 Q Do you see Mr. Maedche is copied on this
 4 document?
 5 A Yes.
 6 Q Can you tell me whether or not Mr. Maedche made
 7 any contributions to the software version 1.0.1
 8 definition in this memo?
 9 A No. I don't think he did. This memo was
 10 written by Ed Edelman. If you see on the bottom of each
 11 of the pages of the functional diagram, it's prepared by
 12 Ed Edelman and approved by Kourosh and myself. So there
 13 is no evidence that Terry Maedche had any input to this
 14 software.
 15 Q So it's your testimony that Mr. Maedche did, in
 16 fact, have no input into this software version; is that
 17 correct?
 18 A Yes.
 19 Q Okay. The court reporter just handed you
 20 what's been marked as Exhibit 248. It's a handwritten
 21 memo, Bates numbers HSA 351526 through 351527. Do you
 22 have this in front of you?
 23 A Yes.
 24 (Plaintiffs' Exhibit 248 was marked for
 25 identification by the court reporter.)

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1 BY MS. REZNIK:
 2 Q Now, this is a memo from Edelman; correct?
 3 A Correct.
 4 Q Mr. Maedche is among the recipients of this
 5 memo; correct?
 6 A Correct.
 7 Q Within this memo it describes software limits
 8 on the BCV command; correct?
 9 THE WITNESS: Repeat the question, please.
 10 (Record read.)
 11 THE WITNESS: Yes.
 12 BY MS. REZNIK:
 13 Q And it also describes what was coded into the
 14 software in one of these -- or many of these diagrams on
 15 the page; correct?
 16 A Apparently, yes.
 17 Q And part of that diagram includes delta P/P
 18 leading into a box called PID; correct -- leading
 19 ultimately into a box called PID; correct?
 20 A Which part are you pointing to? There is a
 21 delta P on P setpoint -- measured delta P on P leading
 22 to a box called PID, yes.
 23 Q So this diagram is showing a delta P/P setpoint
 24 comparative to delta P/P actual measurements that's then
 25 sunk and then brought into this PID box; correct?

422

1 A Yes.
 2 Q And the PID box refers to any derivative
 3 control?
 4 A Correct.
 5 Q And the software that it's describing, it's
 6 related to the APS 3200; correct?
 7 A Yes.
 8 Q Do you know why Mr. Maedche was copied on this
 9 document -- or not copied, rather the recipient of this
 10 document?
 11 A He was one of a group of five recipients. As I
 12 mentioned earlier, it was our practice to provide
 13 information to all those associated with the program so
 14 they could have it, if they have the ability or the
 15 information to do so. So Steve Lampe was manager of
 16 the -- of the department, Kourosh Mehr-Ayin was the lead
 17 engineer, Terry Maedche was the systems engineer, and
 18 Mike Juett was the software engineer.
 19 Q We've looked at other documents that list a
 20 huge list of people copied on documents; correct?
 21 A The majority of documents we looked at today
 22 had about five recipients.
 23 Q There are a few, and we can go back.
 24 A There were a few with longer --
 25 Q Longer lists. Would you agree with that?

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1 A There were a few with longer lists.
 2 Q And those people were copied personally because
 3 they were, like you said, involved in this program of
 4 the APS 3200 control system; is that correct?
 5 A I'm not sure exactly which one you are
 6 referring to right now. If you are talking about the
 7 longer lists, then I need to look at the specifics.
 8 Q Well, let me rephrase the question, actually.
 9 Would you agree that this list of five recipients is a
 10 subset of a larger group of individuals -- part of the
 11 APS 3200 control system program?
 12 A No. I would say this is the -- this is -- this
 13 is the list of people who -- who are part. There was --
 14 I can't think of anybody outside of this group who this
 15 kind of memo would ever be copied to.
 16 Q Which group are you referring to?
 17 A Steve Lampe was manager of the system. Kourosh
 18 was the assistant engineering -- the lead engineer for
 19 the program. Terry Maedche was a systems engineer on
 20 the program, and I was the control systems project
 21 engineer at this time, and Edelman, the writer, was the
 22 systems engineer. This is the systems department pretty
 23 much, and another receiver of that information is the
 24 software -- the other people who actually have to code
 25 the requirements to define the system. That was Mike

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1 Juett, who is the software engineer.

2 Q Describe for me what this group of systems --
3 excuse me. Let me rephrase it.. So these individuals
4 were all part of the systems control group; is that
5 correct?

6 A Yes. With the exception that I was a project
7 engineer; not actually a part of that department, but a
8 control systems project engineer. It was my
9 responsibility that the control system was developed on
10 time, and that the requirements -- as I said, the
11 software engineer, who is -- excuse me -- receiver of
12 this information. You'll see at the bottom, the second
13 to last line text, "The following should have been
14 coded." That's why -- this is Ed's suggestion that the
15 software department should change the way --

16 Q So this group of individuals -- Steve Lampe,
17 Kourosh Mehr-Aylin, Terry Maedche, Pete Suttie, being
18 yourself -- were the sole individuals that were -- that
19 would make up the control group relating to the APS
20 3200?

21 A Yes. And even though there is no date on this,
22 it's at that time. As time changed, people came and
23 went from the group.

24 Q And it was the job of the control group of the
25 APS 3200 to design and develop the control logic for

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1 that APU, including the surge control system; is that
2 correct?

3 A Yes.

4 Q And Terry Maedche was one of four individuals
5 who made up that group?

6 A Yeah. He was the most junior member of that
7 group.

8 Q The court reporter just handed you what's been
9 marked Exhibit 249. It's a memo with Bates numbers HSA
10 351528 through 351535. Do you have that in front of
11 you, Mr. Suttie?

12 A Yes.

13 (Plaintiffs' Exhibit 249 was marked for
14 identification by the court reporter.)

15 BY MS. REZNIK:

16 Q And this memo is regarding the APS 3200
17 software version 1.0; correct?

18 A Correct.

19 Q And it's dated March 23rd, 1993; correct?

20 A Correct.

21 Q This software version includes a diagram for
22 load compressor surge control; correct?

23 A Correct.

24 Q You see at the front of this memo Mr. Maedche
25 was copied on this document; correct?

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23 (Pages 425 to 428)